

land valued in the dry, unirrigated state at anything from 10s. to 30s. per acre was valued at rates of from 25l. to 100l. per acre when properly irrigated.

The concluding paper, by Mr. J. H. Ronaldson, dealt with the copper deposits of Little Namaqualand. The author pointed out that from the very early days it had been known that this district in the extreme west of Cape Colony, lying just south of the Orange River, and bounded on the west by the Atlantic Ocean, was a copper-producing one. As early as 1685 one of the Dutch governors dispatched a party to explore the country, but it was not until 1855 that successful work was begun. The district in which the copper mines are situated lies in the hilly ground about 50 miles from the coast, and is connected with Port Nolloth by a 2 feet 6 inches narrow-gauge railway, the property of the Cape Copper Co. During the year 1904 about 85,000 tons of ore were raised, the percentage of copper ranging from 26 per cent. to as low as 3.6 per cent. T. H. B.

ANTHROPOLOGY AT THE BRITISH ASSOCIATION.

THE South African meeting will long be memorable to members who are especially associated with Section H, not so much on account of the high quality and interest of the papers read (though, as will be seen, these were often of considerable importance) as because it afforded an opportunity of examining, measuring, and photographing specimens of the native races, and (what was still more valuable) of visiting Bantu kraals, seeing the native in his ordinary surroundings, and witnessing some of his ceremonial rejoicings. These visits and investigations were outside the strictly sectional work, and can hardly be detailed here; but they cannot fail of permanent results in an increased comprehension of the conditions of native life and of the great problems, scientific, social, and political, connected with the native peoples of South Africa, by all who were privileged to take part in them.

Dr. Haddon's presidential address, delivered on August 16 at Cape Town, has already been printed in full in *NATURE* (September 7, p. 471), and need not be further referred to here than to point out its exceptionally comprehensive and useful character as a summary of our present information as to the process by which South Africa was peopled, and a sane, earnest, and timely appeal for scientific study on the spot of peoples, some of which are actually vanishing before our eyes, and the others of which are undergoing at the hands of the white race a process of so-called civilisation which will issue in a few years in the total destruction of their ancient institutions and beliefs.

The first paper read was by Mr. E. Sidney Hartland on the totemism of the Bantu. He pointed out that to the French Protestant missionary Casalis belongs the honour of being the first to note the similarity between the totemic practices and belief of the North American Indians and those of the Bantu peoples. The object of the paper was to examine the latter practices and belief, so far as they have been recorded, with the view of ascertaining how far they extend and what evidence there is of their former existence where they are no longer preserved; whether there is any essential difference between the practices and belief of the Bantu and what is generally understood by totemism elsewhere; and lastly, the process of decay. The conclusions arrived at were that, though there is little in what is recorded of the Bantu on the western side of the continent down to the southern boundary of Angola which points directly to totemism, there is sufficient to suggest that it once generally prevailed there, and that its disappearance is due to contact with the Negro; that with regard to the eastern and northern Bantu there can be no doubt about the prevalence of totemism which, though now in decay, corresponded in all essential particulars to that of other races, such as the North American Indians and the Australians; and that its decay was due to the change in the reckoning of kinship from reckoning through the mother only to reckoning through the father only, and to the ancestor-worship which had arisen upon the new social basis thereby laid.

Mr. L. Peringuey, curator of the South African Museum, followed with an address on the Stone age in South Africa. The substance of this address has been published in the volume entitled "Science in South Africa." It was illustrated by a carefully selected series of specimens from the museum, which were examined with interest in the course of an indecisive discussion which followed.

The session on Thursday, August 17, was opened by Mr. Henry Balfour with a paper on the musical instruments of South Africa. Mr. Balfour is already known as an authority on the evolution of the musical bow. In the bow of the Damaras, which is upon occasion temporarily converted into a musical instrument, he recognised an example of the earliest stage of development of a long series of instruments culminating in various forms of the harp. Other types of musical instruments were discussed, of which the most interesting, as well as the most enigmatical, was the *goura* of the Bushmen, an instrument substantially identical with the *iseba* (or *lesiba*) of the Basuto and some other Bantu tribes. On this instrument the writer had little to add to what he had previously published in the *Journal of the Anthropological Institute*. Generally as to the development of musical instruments, stress was laid on the importance of exact information with the view of determining the geographical distribution and evolution of the various types.

Miss B. Bullen-Burry read a paper discussing the social and political questions raised in the United States by the existence of the Negro in the midst of a white population. This paper dealt with an aspect of ethnology rarely brought before the section; but the state of things described by the writer and the problems involved are so similar to those even more critical in character now engaging the attention of politicians in South Africa, and on the satisfactory solution of which depends the future of the country, that it is much to be regretted that the writer had so small an audience.

On Friday, August 18, Prof. von Luschan read a paper on artificial deformation in Africa, abundantly illustrated by lantern slides. He traced all deformations of the human body to a foreign source, except possibly the tattooing in relief and the deformations of the lips.

The Rev. Canon Crisp presented a paper (which was read by the Rev. J. S. Moffat) on the mental characteristics of the Bechuana. He dwelt on the peculiarities of Sechuana grammar and construction, illustrating them by various examples. The Bantu languages will express any idea, however esoteric, and will do it with extraordinary precision and often with great felicity. A foreigner who has acquired one of them will often leave his own language to use a Bantu word, because it conveys his thought more aptly and tersely. Bantu proverbs and metaphors are often most incisive, emphasising with much power and delicacy what it is intended to say. The Bechuana are accustomed to use their proverbs without any introduction, their rapidity of thought enabling both speaker and hearers at once to locate the idea to be conveyed. They are masters in the art of destructive criticism, and their native shrewdness, observation, and wit render them dangerous disputants. Instances of the facility with which Bantu acquire European learning and adapt themselves to European thought were given. This paper aroused much interest on the part of the over-sea members who heard it, and numerous questions on details were addressed to Canon Crisp, though of discussion strictly speaking there was none.

A short paper by Mr. William Grant was read giving an account of a visit in March, 1894, to Magato, the then chief of the Mawenda in the Transvaal. The business of the Cape Town meeting was then closed by the president with a few appropriate words of appreciation of the assistance rendered by Mr. Peringuey, who had kindly acted as local secretary, and of the kindness with which the visitors from the Mother Country had been received.

The session at Johannesburg was opened on Tuesday, August 29, with a paper by Dr. S. Schönland, on arts and crafts among the natives of South Africa, containing a summary of present knowledge on the subject.

A paper followed by Mr. W. A. Squire on the art of the Bushmen. It was illustrated by the exhibition of copies of a number of Bushman drawings, on which the author

commented. The methods by which the artist achieved such wonderfully spirited and life-like results were simple indeed. Coloured earth, pounded stones, charcoal, blood, and bird-fat constituted his pigments. A flat stone was his primitive palette. His brushes were perhaps made of the coarse hair of the male wildebeeste or buffalo. Elsewhere he scratched on the walls of his rock-shelter with a stone a little harder than the surface to be adorned. Much interest is obviously shown in the details. Obscenity, as such, is rare. By way of illustration of the technique of these drawings, a copy of a Bushman battle picture from the Natal side of the Drakensberg Range, near Bushman's Pass, and an unpublished drawing by a member of the Kamilaroi tribe of eastern Australia were exhibited, and compared to the disadvantage of the latter in strength, vividness, and accuracy of portrayal. Finally, the object and meaning of the drawings were touched upon, but not discussed, by the author, possibly because too little is known as yet; perhaps too little ever will be known to give rise to more than conjecture. It may be observed, however, that the late Mr. G. W. Stow, the author of a book recently published on the natives of South Africa, formed a large collection of copies of Bushman drawings. These were examined by the president and several members of the section after the meeting was over, and a strong desire was expressed that they should be published. If this could be done, a careful collation might result in some conclusions as to the motives which prompted and the circumstances which developed these remarkable exhibitions of artistic power by a people usually accounted so low in the scale of humanity—conclusions which might, moreover, throw unexpected light on the similar memorials left by the palæolithic people of central France.

A descriptive summary of recent discoveries of stone implements in South Africa was presented by Mr. J. P. Johnson.

Mr. A. E. Mabile read a paper on the Basuto. As a grandson of the famous missionary Casalis, who had lived (except for a few years when he was completing his education at Paris) his whole life in touch with the people, the author was specially fitted to deal with the subject; and the paper was valuable for the statistics it contained and the picture it offered of the present condition and customs of the Basuto under the British protectorate. In the discussion which followed some exception was taken to the use of the word *Modimo* for *God*, but the author defended its use on the ground that it was the word long ago adopted by the missionaries, and, whether rightly or wrongly adopted at that time, its use was now fully understood and accepted among the Basuto themselves.

On Wednesday, August 30, Prof. von Luschan read a paper on the racial affinities of the Hottentots, in which he contended, mainly on the evidence of the Hottentot language, that the Hottentot were a Hamitic people which had come into contact with the Bushmen and absorbed Bushman characteristics. Apart from a few roots and clicks, he declared the Hottentot language to be strictly Hamitic. On the physical side, the loss of their original high stature and the acquisition of steatopygia and of the spiral curled hair of the Bushman have been the penalties of intermarriage with the pigmy people.

Mr. Randall MacIver exhibited and described a number of lantern slides of the Rhodesian ruins. His report on his recent examination of the ruins was read in greater detail at an evening meeting at Bulawayo. It may here be said, however, that he has with some probability established by his researches the native origin of the ruins, and shown that most of them are of no great antiquity, in no case going back to more than 600 or 700 years. They are essentially Bantu kraals in stone. Great Zimbabwe he identified with the capital of Monomotapa, as described by the earlier Portuguese travellers. All the problems connected with the ruins are not yet solved. We are still ignorant what gave the artistic and military impulses to the erection of these structures, against what enemy they were planned, and what led to their ruin and abandonment. These matters can only be determined, if at all, by accurate scientific exploration, and not by mere speculation like much of that which has been hitherto wasted upon these mysterious remains.

Not the least important day in this section was Friday, September 1. Besides papers by the well known missionary M. Junod on the Thonga tribe (illustrated by an interesting exhibition of native music, both vocal and instrumental), and by Mr. J. W. Shepstone, C.M.G., giving a general sketch of the native tribes, two striking communications were read, the one by the Rev. E. Gottschling on the Bawenda, and the other by the Rev. W. C. Willoughby on the totemism of the Bechuana. Mr. Gottschling's paper was partly historical, partly descriptive, and gave a number of particulars hitherto unpublished relating to the Bawenda, a tribe of Bantu in the north-east of the Transvaal, and their customs and beliefs. Some of the details were of quite extraordinary interest. Mr. Willoughby's paper was a discussion of a number of points connected with the totemic practices and of the relation to them of various ceremonies not usually regarded as totemic in origin, in which oxen and certain vegetables play an important part. The writer's conclusions were open to much debate, for which little time was found. The paper, however, as a whole was so suggestive, directing attention to aspects of the Bantu religious ceremonies other than those from which they are usually regarded, that it will be a great pity if this paper, as well as that of Mr. Gottschling, be not published in some form accessible to anthropologists.

The business of the section was wound up with graceful words of thanks by the president to the local committee, and in particular to Mr. A. von Dessauer, the local sectional secretary, to whose energy, forethought, and organising ability the success of the Johannesburg meeting was so largely due.

THE SOLAR OBSERVATORY ON MOUNT WILSON, CALIFORNIA.¹

IN a report entitled "A Study of the Conditions for Solar Research at Mt. Wilson, California," an outline was given of the circumstances that have resulted in the establishment of a solar observatory on Mount Wilson by the Carnegie Institution of Washington. At the recent annual meeting of the board of trustees, a grant of 150,000 dollars was authorised, for use during 1905. It is expected that the first equipment will cost about twice this sum, and that important additions will result in the future from the operation of a large and well appointed instrument and optical shop.

In April, 1904, a grant of 10,000 dollars was made by the executive committee of the Carnegie Institution for the purpose of bringing the Snow telescope to Mount Wilson from the Yerkes Observatory. An expedition for solar research was accordingly organised under the joint auspices of the University of Chicago and the Carnegie Institution, with the understanding that the funds granted by the Carnegie Institution would be used for the construction of piers and buildings, and for other expenses incidental to the work, while the University of Chicago would furnish the instrumental equipment and pay the salaries of some of the members of the party.

It is a fortunate circumstance that the construction and use of a great reflecting telescope, with a five-foot mirror, is in the general plan of research laid down for the Solar Observatory. In "Year Book" No. 2 (p. 49) of the Carnegie Institution may be found a report on this subject, prepared at the request of Profs. Boss and Campbell, my colleagues on the committee, and improved in many particulars as the result of their criticisms. The prime object of the Solar Observatory is to apply new instruments and methods of research in a study of the physical elements of the problem of stellar evolution. Since the sun is the only star near enough the earth to permit its phenomena to be studied in detail, special attention will be devoted to solar physics. It is hoped that the knowledge of solar phenomena thus gained will assist to explain certain stellar phenomena. Conversely, the knowledge of nebular and stellar conditions to be obtained through spectroscopic and photographic investigations with the

¹ Abridged from No. 2 of "Contributions from the Solar Observatory of the Carnegie Institution of Washington," by Prof. G. E. Hale, director of the Observatory.